

WHAT IS CLAIMED IS:

- 1 1. A method for remote activation and programming of a mobile
2 phone unit by a mobile phone system provider comprising the steps of:
 - 3 a) establishing a communication link between the system provider
4 and a new mobile phone unit programmed to enable transmission of at least one discrete
5 phone call connecting the phone unit to the system provider;
 - 6 b) switching the mobile phone unit from voice communication to
7 paging mode;
 - 8 c) connecting the host processor of the system provider to the phone
9 unit;
 - 10 d) programming the phone unit with NAM parameters using DTMF
11 signals sent from the host processor of the system provider to the phone unit in paging
12 mode;
 - 13 e) activating the mobile phone unit for use.
- 1 2. The method of claim 1 wherein the phone unit is programmed with
2 the phone number of the system provider and the discrete phone call directly connects the
3 phone unit to the system provider.
- 1 3. The method of claim 1 wherein the phone unit has an RF
2 transceiver and the communication link is established through the RF transceiver of the
3 phone unit.
- 1 4. The method of claim 1 wherein the step of programming the phone
2 unit with NAM parameters includes programming the phone with code for a command set
3 for communication of an accounting and tracking protocol with the host processor.
- 1 5. The method of claim 4 wherein the accounting and tracking
2 protocol includes program means for real time accounting of call charges in the phone
3 unit.
- 1 6. The method of claim 5 wherein the program means includes a
2 complex billing algorithm for calculating charges in the phone using multiple factors.
- 1 7. The method of claim 6 wherein the program means includes a rate
2 table retained in the phone unit for calculating current rate charges.

1 8. The method of claim 7 wherein the program means includes means
2 for communicating with the host processor, and transmitting an updated rate table from
3 the host processor to the phone unit.

1 9. The method of claim 5 wherein the phone unit includes means for
2 storing a debit account and decrementing the debit account with call charges in real time.

1 10. The method of claim 9 wherein the phone unit includes a display
2 and circuit means for displaying the current account balance of the debit account in the
3 display.

1 11. A mobile phone system comprising a system provider having a
2 host processor unit and a plurality of system users each having at least one mobile phone
3 unit wherein:

4 the host processor unit has means for selectively establishing a
5 communication link with each mobile phone unit; and,

6 each phone unit includes a processor, memory associated with the
7 processor, program means including a complex billing algorithm and rate data for
8 internally calculating call charges as calls are made and storing call charges as record data
9 in the memory, and communication means for communicating the record data of call
10 charges to the host processor.

1 12. The mobile phone system of claim 11 wherein the program means
2 includes means for generating a debit account in the phone unit and means for
3 decrementing the debit account in real time.

1 13. The mobile phone system of claim 12 wherein the phone unit
2 includes a visual display and the program means generates a visual display of current
3 debit account status in the visual display.

1 14. The mobile phone system of claim 12 wherein the host processor
2 unit includes program means for increasing the amount of the debit account in the phone
3 unit during a communication link with the phone unit.

1 15. The mobile phone system of claim 14 wherein the mobile phone
2 unit has an RF transceiver and the communication link is established over the airways by
3 RF signals.

1 16. The mobile phone system of claim 12 wherein the phone unit has
2 control means for deactivating the phone unit when the debit account is exhausted.

1 17. The mobile phone system of claim 16 herein the phone unit has
2 paging means for establishing a communication link with the host processor unit when
3 deactivated.

1 18. The mobile phone system of claim 12 wherein the phone system
2 includes a transaction station wherein the phone unit has means for establishing a
3 communication link with the transaction station and increasing the amount of the debit
4 account in the phone unit.

1 19. Software for a debit telephone system comprising:
2 internal accounting software for a cordless hand-held mobile telephone
3 unit to establish a debit account with a representation of prepaid funds, store a plurality of
4 charge rates and create a billing algorithm which can classify each telephone call into one
5 of a plurality of billing categories, select a charge rate corresponding to that billing
6 category, calculate an appropriate charge for that telephone call in real time by using said
7 selected charge rate and subtract this appropriate charge from said debit account; and

8 2 software for a system provider's host processor which stores mobile
9 telephone unit identification information, stores operating codes needed for mobile phone
10 unit activation and stores operating codes needed for replenishing mobile phone unit debit
11 accounts whereby, upon receipt of mobile telephone unit identification information from
12 a particular mobile phone unit or its user, said host processor software is capable of
13 ascertaining the operating codes needed to activate that particular mobile phone unit or to
14 replenish its debit account.

1 20. The debit telephone system software of claim 19 wherein the
2 internal accounting software for said cordless handheld mobile telephone can ascertain
3 whether a telephone call being dialed belongs to a long distance call category.

1 21. The debit telephone system software of claim 19 wherein the
2 internal accounting software for said cordless handheld mobile telephone can ascertain
3 whether a telephone call being dialed belongs to a local call category.

1 22. The debit telephone system software of claim 19 wherein the
2 internal accounting software for said cordless handheld mobile telephone can ascertain
3 whether a telephone call being dialed belongs to a roaming call category.

1 23. The debit telephone system software of claim 19 wherein the
2 internal accounting software for said cordless handheld mobile telephone can ascertain
3 whether a telephone call being dialed belongs to a international call category.

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1 24. The debit telephone system software of claim 19 wherein the
internal accounting software for said cordless handheld mobile telephone will prevent
further telephone calls from being made if there are no remaining funds in the debit
account.

1 25. Software for a debit telephone system comprising:
2 internal accounting software for a cordless hand-held mobile telephone
3 unit to establish a debit account with a representation of prepaid funds, store a plurality of
4 charge rates and create a billing algorithm which can classify each telephone call into one
5 of a plurality of billing categories including categories for local, long distance and
6 roaming telephone calls, select a charge rate corresponding to that billing category,
7 calculate an appropriate charge for that telephone call in real time by using said selected
8 charge rate and subtract this appropriate charge from said debit account; and
9 software for a system provider's host processor which stores mobile
10 telephone unit identification information, stores assignable telephone numbers, stores
11 operating codes needed for mobile phone unit activation and stores operating codes
12 needed for replenishing mobile phone unit debit accounts whereby, upon receipt of
13 mobile phone unit identification information from a particular mobile phone unit or its
14 user, said host processor software is capable of ascertaining the operating codes needed to
15 activate that particular mobile phone unit, to replenish its debit account or to select an
16 assignable telephone number corresponding to the user's locale.

1 26. A mobile debit telephone unit operating within a debit telephone
2 system comprising:
3 a transmitter, a receiver, a processor, memory and internal accounting
4 software, wherein said internal accounting software includes a debit account with a
5 representation of prepaid funds, a plurality of charge rates, memory allocation for a phone
6 number to be assigned at the time of activation and a billing algorithm which can classify
7 each telephone call into one of a plurality of billing categories, select a charge rate
8 corresponding to that billing category, calculate an appropriate charge for that telephone
9 call in real time by using said selected charge rate and subtract this appropriate charge
10 from said debit account.

1 27. The mobile debit telephone unit of claim 26 wherein said internal
2 accounting software prevents calls from being made when the debit account has a zero
3 balance.

1 28. The mobile debit telephone of claim 26 wherein said internal
2 accounting software has the ability to accept and implement operating codes generated by
3 a system provider host processor.

1 29. The mobile debit telephone of claim 26 wherein said billing
2 categories include billing categories for local calls, long distance calls and roaming calls.

1 30. A mobile debit telephone unit operating within a debit telephone
2 system comprising:
3 a transmitter, a receiver, a processor, memory and internal accounting
4 software, wherein said internal accounting software includes a debit account with a
5 representation of prepaid funds, a plurality of charge rates, memory allocation for a phone
6 number to be assigned at the time of activation, coding to allow the telephone unit to
7 accept and implement operating codes generated by a system provider host processor and
8 a billing algorithm which can classify each telephone call into one of a plurality of billing
9 categories including billing categories for local calls, long distance calls and roaming
10 calls, select a charge rate corresponding to that billing category, calculate an appropriate
11 charge for that telephone call in real time by using said selected charge rate and subtract
12 this appropriate charge from said debit account.
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31. The mobile debit telephone of claim 30 wherein said operating

codes are encrypted.

- 1 32. A method for activating a mobile debit telephone unit within a
2 debit telephone system run by a system provider comprising:
3 storing mobile debit telephone identification information, mobile debit
4 telephone operating codes and assignable telephone numbers in a system provider's host
5 processor;
6 having the mobile debit telephone or its user initiate communication with
7 the system provider to activate said mobile debit telephone unit including providing to
8 said system provider with information about the identity of said mobile debit telephone
9 unit and the location of its user;
10 inputting said identity and location information into the system provider's
11 host processor;
12 retrieving from said system provider's host processor operating codes to
13 activate said debit telephone, operating codes to establish a debit account balance and an
14 assignable telephone number corresponding to the user location information;
15 communicating said operating codes and assignable telephone number to
16 said mobile telephone unit or its user;
17 inputting said operating codes and assignable telephone number into said
18 mobile debit telephone unit to activate said mobile debit telephone unit, establish a debit
19 account balance and establish a working telephone number for said mobile debit
20 telephone unit.

1 33. The activation method of claim 32 wherein the host processor
2 stored operating codes and assignable telephone number are communicated to the user by
3 a system provider operator who has access to said host processor.

1 34. The activation method of claim 33 wherein the user enters the
2 operating codes into the mobile debit telephone unit by manually punching keys on the
3 mobile debit telephone unit.

1 35. The activation method of claim 32 wherein the host processor
2 stored operating codes are communicated over the airwaves directly from the host
3 processor to the mobile debit telephone unit.

1 36. The activation method of claim 32 wherein said operating codes
2 are communicated to said mobile debit telephone unit or its user in encrypted form.

1 37. The activation method of claim 32 wherein said mobile debit
2 telephone unit identity information includes the telephone's electronic serial number.

1 38. The activation method of claim 32 further comprising having the
2 host processor use the location information provided by the user to select home SIDs for
3 the mobile debit telephone unit and those communicate those home SIDs to the mobile
4 debit telephone unit or its user to allow the mobile debit telephone unit to determine
5 whether it is roaming.

1 39. A method for replenishing a mobile debit telephone unit debit
2 account within a debit telephone system run by a system provider comprising:
3 storing operating codes within a system provider's host processor which
4 are capable of replenishing a mobile telephone unit's debit account;

5 having the mobile debit telephone user pay to have the mobile telephone
6 unit debit account replenished in a designated amount and providing said user with
7 verification of such payment;

8 having the mobile debit telephone or its user initiate communication with
9 the system provider to replenish the mobile telephone unit debit account including
10 providing to said system provider information about the identity of said mobile debit
11 telephone unit and verification of payment;

12 inputting said identity and payment verification information into the
13 system provider's host processor;

14 retrieving from said system provider's host processor operating codes
15 applicable only to the particular mobile debit telephone unit identified in order to
16 replenish that telephone's debit account in the designated amount;

17 communicating said operating codes to said mobile telephone unit or its
18 user; and,

19 inputting said operating codes into said mobile debit telephone unit to
20 replenish its debit account.

1 40. The debit account replenishment method of claim 39 wherein the
2 host processor stored operating codes are communicated to the user by a system provider
3 operator who has access to said host processor.

1 41. The debit account replenishment method of claim 40 wherein the
2 user enters the operating codes into the mobile debit telephone unit by manually punching
3 keys on the mobile telephone unit.

1 42. The debit account replenishment method of claim 39 wherein the
2 host processor stored operating codes are communicated over the airwaves directly from
3 the host processor to the mobile debit telephone unit.

1 43. The debit account replenishment method of claim 39 wherein said
2 operating codes are communicated to said mobile telephone unit or its user in encrypted
3 form.

1 44. The debit account replenishment method of claim 39 wherein said
2 mobile debit telephone unit identity information includes the telephone's electronic serial
3 number.

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